

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

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IN RE: NATURAL GAS :
COMMODITY LITIGATION :

Master File No. 03-CV-6186 (VM)(AJP)

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THIS DOCUMENT RELATES TO :
ALL ACTIONS :

Hon. Victor Marrero, USDJ

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REPLY AFFIRMATION OF CRAIG PIRRONG

I, CRAIG PIRRONG, hereby state as follows:

1. I have reviewed the Bolling Intervenors' Memorandum in Opposition, the Affirmation of Terrence Martell, the Affidavit of Mark Fischer and the Affirmation of Steven Goldberg; the Memorandum in Support of Mark Nordlicht's Motion for Intervention in the Action; and the Comments of the South Carolina Office of Regulatory Staff. Based on my review of these materials, and of other materials in this case, I conclude that (a) the Plan of Allocation is reasonable, and (b) the objections of the Bolling Intervenors to the Plan are unreasonable.
2. A reasonable plan of allocation in a futures market manipulation case must take into consideration the nature of the manipulation alleged, and the data available to assess harm resulting from this manipulation. The Plan of Allocation does both. The alternatives suggested by the Bolling Intervenors do neither.
3. In this case, it is alleged that misreporting of monthly gas transactions prices caused the price of the NYMEX Henry Hub Natural Gas Futures contract to deviate from the price that would have prevailed in a competitive market but for these fraudulent reports.

4. Plaintiffs judged that in such a manipulation, it is reasonable to conclude that the effects of the mis-reports would be concentrated during a short period of time subsequent to the release of the corrupted price reports. I concur in this judgment. Fundamental economic considerations support this view. Although the price reports are an important source of information about the value of natural gas, they are not the only source of information. Over time, traders would be able to observe additional information about fundamentals that would contradict the manipulation-affected price reports. Trading on this information would tend to reverse the effect of the manipulation. Similarly, to the extent that market participants rely on distorted price reports in making supply and demand decisions, they would tend to take actions that would reverse the effects of the manipulation. For instance, manipulations of price reports that cause prices to be artificially high would induce sellers to inject additional supplies into the market, and would induce buyers to purchase less. These actions would tend to reduce price, thereby offsetting the effect of the manipulation.
5. Dr. Dwyer's expert report in this matter provides some empirical support for this view. He finds that the bulk of the artificiality resulting from mis-reporting occurred within the first five trading days of the reports.
6. These considerations mean that, contrary to the representations of the Bolling Intervenors and their affiants, it is reasonable to limit the period of time over which artificiality is presumed to affect prices to the five trading days subsequent to the release of the affected reports.

7. Ideally, the way to compute damages suffered by each trader is to calculate the amount of artificiality on each trading day (based on a rigorous empirical methodology); determine the amount of artificiality bought and sold by each class member; and allocate payments according to the net purchase and sale of artificiality by each class member.
8. Plaintiffs' counsel have done this where the data permits, notably for the 2007 Fund. However, this is not possible for the 2006 Fund, and for some class members, data limitations preclude the implementation of the ideal methodology for the 2007 Fund as well. Thus, Plaintiffs' counsel have with my input utilized other metrics to allocate portions of the 2006 and 2007 Funds. I advised Plaintiffs' counsel on the choice of the appropriate metrics. The metrics reasonably reflect the diverse considerations with respect to the harm suffered from Defendants' conduct.
9. These metrics are reasonable, and reflect an understanding of the economics of the type of manipulation alleged in this matter. In contrast, the metrics proposed by the Bolling Intervenors are not reasonable, and do not reflect an understanding of the relevant economics of manipulation.
10. The Bolling Intervenors, and their expert Dr. Martell, assert that the sum allocated on the basis of trading volume should be increased substantially. An understanding of (a) the economics of floor trading, and the empirical evidence related thereto, and (b) the way that artificiality behaves make it very clear that floor traders who trade in heavy volume suffered little damage as result of the type of manipulation alleged here.

11. One is damaged by a manipulation that distorts prices only to the extent that one buys and sells at prices that reflect different levels of artificiality. Since artificiality can change more, the longer the period of time between purchase and sale, those who hold positions for a long time are more likely to be damaged by a manipulation that distorts prices during the period that they hold this position. However, although floor traders trade in heavy volume, they typically reverse their positions very rapidly, meaning that the amount of artificiality they buy and sell over time is almost certainly nearly equal. This implies that they suffer little damage as the result of a manipulation.
12. There is considerable empirical evidence in the peer reviewed academic finance and economics literature dating back decades showing that futures floor traders hold positions for very short periods of time, and typically do not hold positions overnight.¹
13. For instance, famous futures scholar Holbrook Working found that 44 percent of floor traders end the day “flat” (i.e., with no position), 23 percent carried less than 10 percent of their daily volume, and most of the remaining 33 percent went home with a position of less than two contracts.² Kuserk and Locke found that most

¹ Holbrook Working, Tests of a Theory Concerning Floor Trading on Commodity Exchanges, Food Research Institute Studies: Supplement (1967); Holbrook Working, Price Effects of Scalping and Day Trading, Selected Writings of Holbrook Working (1977); William Silber, Marketmaker Behavior in an Auction Market: An Analysis of Scalpers in Futures Markets, 50 J. of Finance (1984) 937; Gregory J. Kuserk and Peter Locke, Scalper Behavior in Futures Markets: An Empirical Examination 13 J. of Futures Markets (1993) 409; Steven Manaster and Steven Mann, Life in the Pits: Competitive Market Making and Inventory Control, 9 Rev. of Financial Studies (1996) 953.

² Working, Tests of a Theory, id.

scalpers³ end the day flat.⁴ Manaster and Mann concluded that the evidence is most consistent with no inventory carry-over.⁵

14. Silber found that the scalper he studied held an open position for less than two minutes.⁶ He concluded that “perhaps the most interesting interpretation of the trading record is the extremely short time horizon of scalper decision making.”⁷ Kuserk and Locke document that the modal time between trades by floor traders across a variety of futures markets is two minutes.⁸ Manaster and Mann found that on average, after making a trade, depending on the market studied, a floor trader’s *next trade* off-sets between 22 and 52 percent of that trade. Thus, floor traders buy and sell in rapid succession, and sells (buys) follow hard upon sells (buys), meaning that traders tend to hold positions for very short periods of time.

15. Silber also documented that the average per contract profit of a floor trader was less than the bid-ask spread.⁹ This means that prices typically change little during the period during which floor traders hold their positions.

16. This peer reviewed empirical academic research (which is well grounded in theory) uniformly implies that awarding damages based on volume will substantially over-compensate floor traders. A trader is damaged by a manipulation if he purchases and sells at different levels of artificiality. For instance, if a trader purchases a contract when the futures price is artificial by +\$.10 sells and contract with no artificiality is damaged by \$.10 times the size of

³ A scalper is a term used to describe a floor trader serving as a market maker.

⁴ Kuserk and Locke, *supra* note 1, at 415.

⁵ Manaster and Mann, *supra* note 1, at 958.

⁶ Silber, *supra* note 1, at 942.

⁷ *Id.*, at 952.

⁸ Kuserk and Locke, *supra* note 1, at 419.

⁹ Silber, *supra* note 1, at 948.

the contract times the number of contracts bought at that price. A trader who buys at +\$.10 of artificiality and sells at +\$.10 of artificiality is not damaged at all. That is, *changes* in artificiality between the time of purchase and sale produce damage.

17. Rapid-fire buying and selling, which results in a trader holding a position in a futures contract for a very short period of time (which is true of floor traders, as demonstrated by the extensive empirical research), makes it highly likely that a trader is buying and selling the same amount of artificiality, resulting in no damage for the vast bulk of his transactions. Since artificiality is highly unlikely to change substantially and repeatedly over periods measured in seconds, those who hold positions for very short periods of time are not substantially harmed by artificiality even if they trade in large volume.¹⁰
18. Put differently, the very nature of floor trading means that even when prices are artificial as a result of manipulation, floor traders are likely to suffer very little economic harm per each individual buy-sell transaction. It is highly likely that that transaction is reversed at the same artificiality it was initiated. If each trade incurs little or no artificial impact, the aggregate damage suffered by a floor trader is small as well: zero multiplied by a large (volume) number is still zero.
19. Thus, paying compensation on the basis of volume provides the greatest compensation for those suffering the least harm: those trading in large volume, but trading in a way that generates little or no exposure to changes in artificiality.

¹⁰ The Silber result that profits per contract tend to be smaller than the bid-ask spread implies that price changes during the period of time a trader holds a position are small. Since the empirical evidence in the Dwyer report implies that the total levels of artificiality are small relative to the normal variation in natural gas prices, it is reasonable to conclude that *changes* in artificiality over the typical floor trader holding period are very small.

20. Dr. Martell eloquently (if unintentionally) demonstrates that volume should not be compensated when he argues that the effects of the manipulations alleged in this case are enduring and persistent (e.g., extending beyond a five day period). Persistence in artificiality means that those who trade frequently are buying and selling repeatedly at the same level of artificiality, and hence are not harmed.
21. Here, as is economically sensible, and as demonstrated by Dr. Dwyer, the impact of false reports dissipates over time due to the forces of arbitrage and price discovery. Even if this dissipation occurs over the period of five days through traders who buy and sell numerous times during a single day face little exposure to changes in artificiality because the change in artificiality over the relevant time interval (measured in seconds) is still very small.
22. The foregoing considerations further mean that net volume is highly preferable to gross volume as a measure of harm resulting from the manipulation alleged here. As just noted, a trader suffers damage from manipulation to the extent that artificiality changes (in an adverse direction) over the period in which a position is open. A trader that buys more than he sells (or *vice versa*) over a period of time that manipulation has affected prices, and hence has a non-zero net volume, is more likely to have suffered a loss, because such an imbalance between buys and sells implies the maintenance of a net open position.
23. Moreover, since artificiality must change for a trader to be damaged by a manipulation, it is reasonable to confine the net volume-based allocation to the period of time when manipulation is likely to have had the greatest impact on prices, i.e., during the first five trading days of the month.

24. These various considerations also testify to the reasonableness of the use of net losses during the first five trading days as a basis for allocating settlement funds. Losses reflect price changes over the period a participant holds a position, and to the extent that artificiality changes drove these price changes, they would contribute to losses. Moreover, given the prevalence of various forms of manipulative conduct during the class period, it is reasonable to conclude that some traders would not have entered the market, or would have traded in smaller quantities, had they been aware of the extent to which the market was affected by such conduct. Allocating settlement funds based on net losses provides some compensation to those who would have traded less, and hence suffered smaller losses, had they been aware of the magnitude of the misconduct.
25. The size of the positions entered into by floor traders typically vary.
26. With respect to the choice of hedging adjustment, I advised Plaintiffs' counsel that a substantial reduction for hedgers is justified and reasonable given the nature of their business and the close relationship between NYMEX natural gas futures contracts and the type of swap agreement which represent the bulk of these dealer's business.

Dated: November 4, 2009

/s/ Craig Pirrong
Craig Pirrong

CERTIFICATE OF SERVICE

I hereby certify that on November 4, 2009, the foregoing *Affirmation of Dr. Craig Pirrong* was filed and served via the Southern District's ECF system.

Dated: November 4, 2009

Respectfully,

/s/ Christopher Lovell

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